



## Memorandum

Date April 13, 1981

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Family Planning Evaluation Division, CHPE

Subject Foreign Trip Report (AID/RSSA): Identification of Neonatal Risk Factors -  
Geneva, Switzerland, February 27-28, 1981

To William H. Foege, M.D.  
Director, Centers for Disease Control (CDC)  
Through: Horace G. Ogden  
Director, Center for Health Promotion and Education *HGO*

## SUMMARY

- I. DATES AND PLACES OF TRAVEL
- II. PURPOSE
- III. CHIEF PERSONS CONTACTED
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## SUMMARY

Dr. Brian McCarthy and I have been working on a project to formulate a simple model to determine the risk of a pregnant woman having a baby that would die as a neonate. The results of our work would help private physicians evaluate patients based on this model to facilitate risk estimates of a neonatal death. In addition, public health physicians could utilize this model to make informed decisions regarding the management of public health programs directed at the care of pregnant women. The World Health Organization (WHO) has determined that it would be beneficial to have a methodology developed for implementation in other countries around the World analogous to this predictive model. Dr. McCarthy and I were asked to evaluate the potential for such an undertaking.

As a result of my visit, we have completed the analysis and documentation of the predictive model based upon the State of Georgia's data. Furthermore, we decided that various limitations in the targeted countries would make the extrapolation of our methodology to those countries unfeasible. Consequently, we have started to develop a new methodology that would be readily useable by the targeted countries.

## I. DATES AND PLACES OF TRAVEL

February 27-28, 1981 - Geneva, Switzerland

## II. PURPOSE

- A. To complete documentation and analysis of our paper on identifying neonatal risk factors in the State of Georgia
- B. To discuss and begin to develop a simplified methodology for identifying neonatal risk factors and predicting neonatal deaths in targeted countries

### III. CHIEF PERSONS CONTACTED

- A. Brian J. McCarthy, M.D., Medical Epidemiologist, Maternal and Child Health, WHO, Geneva, Switzerland
- B. Dr. H. Hansluwka, Dissemination of Statistical Information, WHO, Geneva, Switzerland
- C. Dr. Alexander Kessler, M.D., Ph.D., Director, Special Program in Human Reproduction, WHO, Geneva, Switzerland
- D. Other personnel at WHO, Geneva, Switzerland

### IV. BACKGROUND

Several public health programs in Georgia are aimed at reducing neonatal mortality. These programs, with varying degrees of intent and success, attempt to identify high risk women, and provide the appropriate level of care or service. Although there are entrance requirements designed to select high risk women for acceptance into one or more of these programs, no systematic or objective criteria have been applied to all pregnant patients to accomplish that goal. The purpose of our study in Georgia was to provide a primary care physician with a means of assessing the risk that pregnant women will have new borns who die as neonates and to provide a public health physician the means of allocating resources to maximize the benefit of public health programs. We developed a simple formula through a sophisticated statistical technique, discriminate function analysis, focusing on previously identified factors associated with neonatal death. We used vital records and a widely available computer package to make it easier for other personnel to develop similar capabilities for their own state or geographic region within the United States.

WHO has deemed it important for other countries to have a similar capability. Dr. McCarthy and I are working on developing methodologies for these countries.

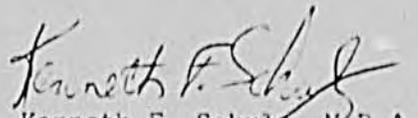
### V. RESULTS OF CONSULTATION

- A. We had a very productive meeting that completed the analysis and documentation of our study. In short, we designed a predictive model, through the use of discriminate function analysis, that identifies 38% of the neonatal deaths by isolating only 11% of the births in Georgia. We utilized existing vital records data for 230,585 single live births occurring in Georgia for the period 1974 through 1976 to describe factors recorded on the birth certificates which are determinants of neonatal mortality on a statewide basis. We found maternal age, race, premature birth, spontaneous abortion or stillbirth, complications related to pregnancy, complications not related to pregnancy, and birth type (multiple gestation) to be significant. We propose that private physicians evaluate patients based on this model to facilitate risk estimates of a neonatal death. In addition, we suggest that public health physicians utilize this model to make and form decisions regarding the management of public health programs directed at the care of pregnant women.

- B. We discussed the potential limitations of available data for similar analysis in other countries. Dr. McCarthy, through his recent experience, knew of at least one country that would have sufficient data for such an analysis. We agreed that we needed further information on the data available in other countries. We also concluded that a uniform methodology, at least regarding the data utilized, would not be feasible. Methodologies would have to be tailored to the data available in each individual country.
- C. We discussed the potential of using discriminate function analysis as the statistical methodology for the targeted countries. We concluded that use of this technique, or any other sophisticated technique such as multiple linear logistic regression, would not be feasible. Either the country would not have the requisite computer hardware or software, or the country would not have the statistical support personnel necessary to do the analysis. We decided that the approach needed to be simpler, and that it should be based upon cross tabulations. One concept that we came up with was relative risk segmentation, and another was the segmentation of prevalences after the cross tabulations. We felt that it was important to make the methodologies simple but that it was also important to address confounding factors. Nevertheless, we did decide that this part of the methodologic approach could be uniform for all the countries involved.

#### VI. FUTURE ACTIVITIES

- A. Contact other targeted countries to determine the data available for a neonatal risk analysis.
- B. Further develop and refine the statistical methodology to be used by the targeted countries in time to discuss it with Dr. McCarthy when he visits the United States for the EIS Conference in April.
- C. Document the approach for a wider presentation at WHO in Geneva in May.

  
Kenneth F. Schulz, H.B.A.